CLAIM AMENDMENTS

1. (original) A method for hyperpolarizing atomic nuclei through optical pumping in a test cell, whereby polarization of an electron spin of an optically pumpable species in a mixture created by means of a laser light is transferred to the nuclear spin of an atom to be hyperpolarized, characterized in that components of the mixture and/or for the hyperpolarization of inert compounds are guided into the test cell such that the mixture does not ~~or only to a slight degree~~ touch the inner walls of the test cell.

2. (currently amended) [[A]] The method according to Claim 1 characterized in that the mixture is inclined in the direction of flow, especially at a 45° angle to the side wall, when guided into the test cell.

3. (currently amended) [[A]] The method according to Claim 1 [[or 2]], characterized in that the mixture with optically pumpable species and nuclei to be hyperpolarized is guided as a free beam into the test cell.

4. (currently amended) [[A]] The method according to ~~any of the previous claims~~ claim 1, whereby a bypass flow

consisting of a compound for the separation of the mixture from the inner walls is guided into the test cell.

5. (currently amended) [[A]] The method according to ~~any of the previous claims~~ claim 1, characterized in that the laser light is radiated into the test cell perpendicularly to the direction of flow of the mixture flowing in the test cell.

6. (currently amended) [[A]] The method according to ~~any of the previous claims~~ claim 1, characterized in that the laser light is radiated into the test cell in a counter current to the direction of flow of the mixture flowing in the test cell.

7. (currently amended) [[A]] The method according to ~~any of the previous claims~~ claim 1, characterized in that the mixture is disengaged at the point where the intensity of the laser is largest.

8. (currently amended) [[A]] The method according to ~~any of the previous claims~~ claim 1, characterized in that the walls of the test cell are cooled.

9. (currently amended) [[A]] The method according to ~~any of the previous claims~~ claim 1, characterized in that the spin

exchange is transferred indirectly via a non-optically pumpable species to the nuclear spin of a nucleus to be hyperpolarized.

10. (currently amended) [[A]] The method according to ~~any of the previous claims~~ claim 1, whereby ^{129}Xe, ^{3}He or $^{13}CO_2$ are hyperpolarized.

11. (currently amended) An apparatus ~~device~~ for implementing [[A]] the method according to ~~any of the previous claims~~ claim 1 [[to 10]], characterized by at least one means [[feeds]] for feeding into the test cell the components of the mixture out of optically pumpable species and hyperpolarizable nuclei and/or other compounds inert to hyperpolarization such that the mixture does not touch ~~or only slightly touches~~ the inner walls of the test cell.

12. (currently amended) The ~~device~~ apparatus according to claim 11, characterized in that the inlet and/or outlet forms a predetermined angle to the longitudinal axis of the test cell, in particular 45°.

13. (currently amended) The apparatus according to ~~one of claims~~ claim 11 [[or 12]], [[cit]] characterized in that at least one nozzle is the means.

14. (currently amended) The apparatus according to ~~one of preceding claims~~ claim 11 [[to 13]], characterized in that the means forms a free column for injecting the mixture into the test cell.

15. (currently amended) The apparatus according to ~~one of preceding claims~~ claim 11 [[to 14]], characterized in that the means is a surrounding stream for the mixture.

16. (currently amended) The apparatus according to ~~one of preceding claims~~ claim 11 [[to 15]], characterized in that at least one laser is set such that the laser beam is oriented perpendicular and/or countercurrent to the flow of the mixture in the test cell.

17. (currently amended) The apparatus according to ~~one of preceding claims~~ claim 11 [[to 16]], characterized in that the input window or windows of the test cell have for the laser beam the greatest possible spacing from the input of the test cell for the optically pumpable species.

18. (currently amended) The apparatus according to ~~one of claims~~ claim 11 [[to 17]], characterized by the provision of at least one supply container for a chemical species.

19. (currently amended) The apparatus according ~~one of preceding claims~~ claim 11 [[to 18]], characterized in that the supply container is mounted in the supply line(s) of the apparatus.

20. (currently amended) The apparatus according to ~~one of preceding claims~~ claim 11 [[to 19]], characterized by means for cooling walls of the test cell.